

## REMARKS

Reconsideration of this application, as amended, is respectfully requested.

This application has been reviewed in light of the Office Action dated June 30, 2004. Claims 6, 9-25, 27-31, and 33-43 are currently pending in the application. As indicated above, Claims 6, 9-11, 25, and 33-35 have been amended, and Claims 1-5, 7-8, 26, and 32 have been cancelled without prejudice.

In the Office Action, the Examiner now rejects Claims 1, 3-25, and 28-43 under 35 U.S.C. §102(e) as anticipated by *Kuwahara et al.* (U.S. 6,597,678), and Claims 26 and 27 under 35 U.S.C. §103(a) as being unpatentable over *Kuwahara* in view of *Raleigh et al.* (U.S. 6,101,399).

As indicated above, independent Claims 1, 4, 6, 25, and 32-43 were rejected as allegedly being anticipated by *Kuwahara*. More specifically, the Examiner asserts that *Kuwahara* teaches all the elements of Claims 1, 4, 6, 25, and 32-43. However, Claims 1, 4, and 32 have been cancelled without prejudice. Accordingly, it is respectfully submitted that the rejection of Claims 1, 4, and 32 is moot.

Additionally, Claims 6, 25, and 33-35 have been amended. More specifically, Claim 6 has been amended to recite *wherein the forward fading information extraction unit comprises: a forward fading decoder for decoding forward fading information for each path fed back from a mobile station from the received reverse signal of the reverse processor; and a forward fading extractor for extracting a forward fading coefficient from the decoded forward fading information; and wherein if the decoded forward fading information is represented as complex information*  $\{\beta_i^F \underline{a}(\theta_i)^H \underline{w}, i = 1, 2, \dots, M\}$ , *the forward fading extractor extracts a complex forward fading coefficient*  $\{\beta_i^F, i = 1, 2, \dots, M\}$  *using a weight vector*  $\underline{w}$  *and an estimated array vector*  $\{\underline{a}(\theta_i), i = 1, 2, \dots, M\}$  *used for formation of the transmission beam*, Claim 25 has been amended to recite *wherein if the forward signal forms an omnidirectional beam, the forward fading estimator estimates complex forward fading information*  $\{\beta_i^F, i = 1, 2, \dots, M\}$ , Claim 33 has been amended to recite *wherein if the forward fading information is represented as complex information*

$\{\beta_i^F \underline{a}(\theta_i)^H \underline{w}, i = 1, 2, \dots, M\}$ , the forward fading extractor extracts a complex forward fading coefficient  $\{\beta_i^F, i = 1, 2, \dots, M\}$  using a weight vector  $\underline{w}$  and an estimated array vector  $\{\underline{a}(\theta_i), i = 1, 2, \dots, M\}$  used for formation of the transmission beam; and wherein if the forward fading information is represented as quantitative information  $\{|\beta_i^F \underline{a}(\theta_i)^H \underline{w}|, i = 1, 2, \dots, M\}$ , the forward fading extractor extracts a forward fading severity  $\{|\beta_i^F|, i = 1, 2, \dots, M\}$  using the weight vector  $\underline{w}$  and an estimated array vector  $\{\underline{a}(\theta_i), i = 1, 2, \dots, M\}$  used for formation of the transmission beam, Claim 34 has been amended to recite wherein the forward fading estimator estimates complex forward fading information  $\{\beta_i^F \underline{a}(\theta_i)^H \underline{w}, i = 1, 2, \dots, M\}$  from the forward signal and estimates forward fading severity information  $\{|\beta_i^F \underline{a}(\theta_i)^H \underline{w}|, i = 1, 2, \dots, M\}$  from the forward signal; and wherein if the forward signal forms an omnidirectional beam, the forward fading estimator estimates the complex forward fading information  $\{\beta_i^F, i = 1, 2, \dots, M\}$  and the estimates forward fading severity information  $\{|\beta_i^F|, i = 1, 2, \dots, M\}$ , and Claim 35 has been amended to recite wherein if the forward fading information is represented as complex information  $\{\beta_i^F \underline{a}(\theta_i)^H \underline{w}, i = 1, 2, \dots, M\}$ , a forward fading extractor extracts a complex forward fading coefficient  $\{\beta_i^F, i = 1, 2, \dots, M\}$  using a weight vector  $\underline{w}$  and an estimated array vector  $\{\underline{a}(\theta_i), i = 1, 2, \dots, M\}$  used for formation of the transmission beam; wherein if the forward fading information is represented as quantitative information  $\{|\beta_i^F \underline{a}(\theta_i)^H \underline{w}|, i = 1, 2, \dots, M\}$ , the forward fading extractor extracts a forward fading severity  $\{|\beta_i^F|, i = 1, 2, \dots, M\}$  using the weight vector  $\underline{w}$  and an estimated array vector  $\{\underline{a}(\theta_i), i = 1, 2, \dots, M\}$  used for formation of the transmission beam; wherein a forward fading estimator estimates complex forward fading information  $\{\beta_i^F \underline{a}(\theta_i)^H \underline{w}, i = 1, 2, \dots, M\}$  from the forward signal and estimates forward fading severity information  $\{|\beta_i^F \underline{a}(\theta_i)^H \underline{w}|, i = 1, 2, \dots, M\}$  from the forward signal; and wherein if the forward signal forms an omnidirectional beam, the forward fading estimator estimates the complex forward fading information  $\{\beta_i^F, i = 1, 2, \dots, M\}$  and the estimates forward fading severity information  $\{|\beta_i^F|, i = 1, 2, \dots, M\}$ . Accordingly, it is respectfully submitted that these recitations are not disclosed in *Kuwahara* and that Claims 6, 25, and 33-35 are patentably distinct from

*Kuwahara*. Therefore, it is respectfully requested that the rejection of Claims 6, 25, and 33-35 be withdrawn.

With regard to independent Claims 36-43, each of these claims recites using forward fading information signals. However, it is respectfully submitted that “the value obtained through frequency conversion by R”, as cited by the Examiner, is not an equivalent to a fading frequency of the present invention. In addition, *Kuwahara* does not teach calculating an average reverse fading power and Doppler frequency estimator for estimating the mobility of the mobile station. Therefore, it is respectfully submitted that Claims 36-43 are patentably distinct from *Kuwahara*, and it is respectfully requested that the rejection of Claims 36-43 be withdrawn.

Finally, it is respectfully submitted that the finality of the present Office Action is improper, i.e., premature. As indicated in §706.07(a) of the MPEP, under present practice, second or any subsequent actions on the merits shall be final, *except where the Examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement*. Further, a second or any subsequent action on the merits in any application should *not* be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed. That is, a final rejection is improper where there is another new ground of rejection introduced by the Examiner, which was not necessitated by amendment to the claims. In the present application, the previous amendments to the claims did not require the Examiner to perform a new search as the amendments merely added existing limitations from the previously examined dependent claims into the independent claims, i.e., the recitations of Claim 2 into Claim 1. Further, as the Examiner has withdrawn his previous rejections based solely on the arguments presented in the previous response, it is respectfully submitted that the finality of the present Office Action is premature and it is respectfully requested that the finality be withdrawn.

As stated above, independent Claims 6, 25 and 32-43 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 9-24 and 27-31, these are likewise believed to be allowable by virtue of their dependence on their respective amended

independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 9-24 and 27-31 is respectfully requested.

In view of the preceding amendments and remarks, it is respectfully submitted that all pending claims, namely Claims 6, 9-25, 27-31, and 33-43, are in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicants' attorney at the number given below.

Respectfully submitted,



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